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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Aravind Dattatrayao Chinchure

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GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH
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EXAMINER

CHUO, TONY SHENG HSIANG

ART UNIT

PAPER NUMBER

1745

MAIL DATE

DELIVERY MODE

08/27/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/814,738	Applicant(s) CHINCHURE ET AL.	
	Examiner Tony Chuo	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 7-17 and 30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7-17 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Claims 1-3, 7-17, and 30 are currently pending. Claim 5 has been cancelled. The amended claims do not overcome the previously stated 102 and 103 rejections. Therefore, claim 1-3, 7-17, and 30 stand rejected under the following 102 and 103 rejections.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 7, 8, 12, 13, and 15-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Bourgeois et al (US 2004/0110054).

Regarding claims 1, 7, 15, and 16, the Bourgeois reference discloses a fuel cell stack "10" comprising: a plurality of solid oxide fuel cells "12" wherein each fuel cell comprises an anode "82", a cathode "86", an electrolyte "84" interposed therebetween, and a divider "72" in contact with the cathode to facilitate the transport of electrons; and a plurality of hollow fuel manifolds "20" in contact with a respective divider of a

respective one of the plurality of fuel cells, wherein the hollow manifold comprises a top wall "30" comprising a plurality of openings "54" extending therethrough in flow communication with the hollow manifold and is configured to provide a flow path for the fuel (See paragraphs [0006],[0022],[0024], [0027] ,[0029],[0040] and Figures 1, 3, and 5).

Regarding claims 2, 12, and 13, it also discloses a divider "72" that is disposed on the anode wherein the divider is fabricated from stainless steel and is chemically compatible with the anode and cathode (See paragraph [0029]).

Regarding claim 3, it also discloses a divider that is substantially hollow (See Figure 5).

Regarding claim 8, it also discloses a bottom wall "32" that separates the flow path of the fuel and oxidant (See Figure 3).

Regarding claim 17, it also discloses a fuel cell stack that has a planar structure (See Figure 1).

4. Claims 1, 3, 7-9, 12, 15-17, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Barnett et al (US 5770327).

Regarding claims 1, 7, 9, 15, 16, and 30, the Barnett reference discloses a SOFC stack comprising: a plurality of unit fuel cells "13" wherein each fuel cell comprises an anode "36", a cathode "38", an electrolyte "37" interposed therebetween, and a Ni felt or mesh "39" in contact with the anode to facilitate the transport of electrons; and a plurality of hollow interconnects "12" in contact with a respective Ni felt of a respective one of the plurality of fuel cells, wherein the hollow interconnect comprises a top wall

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"16" comprising a plurality of openings "29" extending therethrough in flow communication with the hollow manifold and is configured to provide a flow path for the fuel (See column 2, lines 20-56 and Figure 4 and 5).

Examiner's note: The anode interconnect is construed as the metal sheets "16" & "17" and the cathode interconnect is construed as metal sheets "17" & "18". In addition, it is inherent that the Ni felt "39" reduces resistance between the anode layer and anode interconnect and between the cathode layer and the cathode interconnect.

Regarding claims 3, and 12, it also discloses a Ni felt or mesh "39" that is substantially hollow, disposed on the interconnect, and is chemically compatible with the anode and cathode (See column 2, lines 55-56 and Figure 4).

Regarding claim 8, it also discloses a metal sheet "17" that separates the flow path of the fuel and oxidant (See Figure 5).

Regarding claim 17, it also discloses a fuel cell stack that has a planar structure (See Figure 2).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 2, 10, 11, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barnett et al (US 5770327) in view of Mardilovich et al (US 2004/0081878). The Barnett reference is applied to claim 1 for reasons stated above.

However, Barnett et al does not expressly teach a conducting layer that has a thickness of 1 to 250 micron; a conducting layer that has a thickness of 1 to 50 micron; a conducting layer comprising a material selected from the group consisting of noble metals, metallic alloys, cermets, and oxide; or a conducting layer comprising a material selected from the group consisting of gold, silver, platinum, palladium, iridium, ruthenium, rhodium, indium-tin-oxide, ruthenium oxide, rhodium oxide, iridium oxide, and indium oxide. The Mardilovich reference discloses current collectors that has a thickness of 1 to 10 microns wherein the current collectors comprise conductive metals, conductive oxides, and conductive cermets such gold, silver, platinum, palladium, ruthenium, and ruthenium oxide (See paragraphs [0036],[0037],[0053]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Barnett fuel cell to include current collectors that has a thickness of 1 to 10 microns and comprise conductive metals, conductive oxides, and conductive cermets such as gold, silver, platinum, palladium, ruthenium, and ruthenium oxide in order to utilize current collector materials that are compatible with solid oxide fuel cells, and to minimize the thickness of the current collector to reduce the resistivity of the current collector.

Response to Arguments

7. Applicant's arguments filed 6/25/07 have been fully considered but they are not persuasive.

The applicant argues that Bourgeois does not disclose a conducting layer disposed on the anode, cathode, or interconnect. The examiner disagrees. Figure 11 of the Bourgeois reference clearly shows a divider "72" (conducting layer) that is in direct contact with the cathode "86" and the interconnect "20". Therefore, Bourgeois et al does disclose a conducting layer that is disposed on at least one of the anode layer, cathode layer, or interconnect.

The applicant also argues that Barnett neither discloses nor suggests the feature of a hollow manifold that forms a single chamber. This argument is not commensurate with the scope of the claims. Claim 30 recites "a hollow manifold comprising a top wall, a first side wall, and a second side wall, said top wall, first side wall, and second side wall defining a chamber therein". There is no requirement that the hollow manifold has to form a single chamber.

The applicant also argues that Barnett does not disclose a conducting layer disposed on the anode, cathode, or interconnect. The examiner disagrees. Figure 4 of the Barnett reference shows a Ni felt layer "9" (conducting layer) that is in contact with the interconnect "12" and the anode "36". Therefore, Barnett et al does disclose a conducting layer disposed on at least one of the anode, cathode, or interconnect.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571) 272-0717. The examiner can normally be reached on M-F, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC



JONATHAN CREPEAU
PRIMARY EXAMINER